

**Remarks**

Examiner Kunemund is thanked for the thorough Office Action.

**In the Claims**

The claims have not been amended.

**Claim Rejections**

**The Rejection Of Claims 1 To 8, 11, 12, 17 To 20, 23, 29, 38 To 40, 43, 46 To 48 And 51 Under 35 U.S.C. §102(b) As Anticipated By Korkishko et al. ("Reverse proton exchange for buried waveguides in LiNbO<sub>3</sub>," Yu N. Korkishko et al.; J. Opt. Soc. Am. A, Vol. 15, No. 7, pp. 1838 to 1842 (1998))**

The rejection of claims 1 to 8, 11, 12, 17 to 20, 23, 29, 38 to 40, 43, 46 to 48 and 51 under 35 U.S.C. §102(b) as anticipated by Korkishko et al. ("Reverse proton exchange for buried waveguides in LiNbO<sub>3</sub>," Yu N. Korkishko et al.; J. Opt. Soc. Am. A, Vol. 15, No. 7, pp. 1838 to 1842 (1998)) (the Korkishko Article) is acknowledged.

**The Rejection Of Claims 30 And 31 Under 35 U.S.C. §102(b) As Anticipated By Jp 07-218736 (Japanese Publication JP407218736 A to Yamada, Takashi)**

The rejection of claims 30 and 31 under 35 U.S.C. §102(b) as anticipated by Jp 07-218736 (Japanese Publication JP407218736 A to Yamada, Takashi) (the '736 Yamada Pub.) is acknowledged.

**The Rejection Of Claims 9, 10, 13 To 16, 21, 41, 42, 44, 45, 49, 50, 52 And 53 To 61 Under 35 U.S.C. §103(a) as Being Unpatentable Over Korkishko et al. ("Reverse proton exchange for buried waveguides in LiNbO<sub>3</sub>," Yu N. Korkishko et al.; J. Opt. Soc. Am. A, Vol. 15, No. 7, pp. 1838 to 1842 (1998))**

The rejection of claims 9, 10, 13 to 16, 21, 41, 42, 44, 45, 49, 50, 52 and 53 to 61 under 35 U.S.C. §103(a) as being unpatentable over Korkishko et al. ("Reverse proton exchange for buried waveguides in LiNbO<sub>3</sub>," Yu N. Korkishko et al.; J. Opt. Soc. Am. A, Vol. 15, No. 7, pp. 1838 to 1842 (1998)) (the Korkishko Article) is acknowledged.

**The Rejection Of Claims 22 And 24 To 28 Under 35 U.S.C. §103(a) as Being Unpatentable Over Korkishko et al. ("Reverse proton exchange for buried waveguides in LiNbO<sub>3</sub>," Yu N. Korkishko et al.; J. Opt. Soc. Am. A, Vol. 15, No. 7, pp. 1838 to 1842 (1998))**

The rejection of claims 22 and 24 to 28 under 35 U.S.C. §103(a) as being unpatentable over Korkishko et al. ("Reverse proton exchange for buried waveguides in

LiNbO<sub>3</sub>,” Yu N. Korkishko et al.; J. Opt. Soc. Am. A, Vol. 15, No. 7, pp. 1838 to 1842

(1998)) (the Korkishko Article) is acknowledged.

**The Rejection Of Claims 32 To 37 Under 35 U.S.C. §103(a) as Being Unpatentable  
Over Jp 07-218736 (Japanese Publication JP407218736 A to Yamada, Takashi)**

The rejection of claims 32 to 37 under 35 U.S.C. §103(a) as being unpatentable over Jp 07-218736 (Japanese Publication JP407218736 A to Yamada, Takashi) (the '736 Yamada Pub.) is acknowledged.

Applicants urge that claims 1 to 8, 11, 12, 17 to 20, 23, 29 to 31, 38 to 40, 43, 46 to 48 and 51 each recite one or more limitations distinguishing over the Korkishko Article under §102(b) as Korkishko does not fairly teach or disclose the combination of limitation of the claims, i.e., e.g. for independent claim 1:

- a) providing a ferroelectric crystal;
- b) diffusing a vapor phase proton into the ferroelectric crystal by a vapor proton-exchange process to form a vapor proton-exchange (VPE) waveguide material structure having a step refractive index profile; and
- c) treating the VPE waveguide material structure with one or more processes selected from the group consisting of: a post thermal anneal process and an additional reverse proton-exchange process to complete fabrication of the waveguide,

whereby the refractive index profile of the fabricated waveguide can be flexibly optimized.

Applicants urge that claims 30 and 31 each recite one or more limitations distinguishing over the '736 Yamada Pub. under §102(b) as Yamada does not fairly teach or disclose the combination of limitation of the claims, i.e., e.g. for independent claim 30:

- a) providing a ferroelectric crystal;
  - b) diffusing a vapor phase proton into the ferroelectric crystal by a vapor proton-exchange process to form a vapor proton-exchange (VPE) waveguide material structure having a step refractive index profile; and
  - c) treating the VPE waveguide material structure with a post thermal anneal to complete fabrication of the waveguide,
- whereby the refractive index profile of the fabricated waveguide can be flexibly optimized.

Applicants urge that claims 9, 10, 13 to 16, 21, 22, 24 to 28, 41, 42, 44, 45, 49, 50, 52 and 53 to 61 distinguish over the Korkishko Article under §103(a) because, inter alia, the prior art lack a suggestion that the reference should be modified in a manner required to meet the claims; the Examiner has made a strained interpretation of the reference that could be made only by hindsight; and the Examiner has not presented

a convincing line of reasoning as to why the claimed subject matter as a whole, including its differences over the prior art, would have been obvious.

Applicants urge that claims 32 to 27 distinguish over the '736 Yamada Pub. under §103(a) because, inter alia, the prior art lack a suggestion that the reference should be modified in a manner required to meet the claims; the Examiner has made a strained interpretation of the reference that could be made only by hindsight; and the Examiner has not presented a convincing line of reasoning as to why the claimed subject matter as a whole, including its differences over the prior art, would have been obvious.

Therefore claims 1 to 61 are submitted to be allowable over the cited references and reconsideration and allowance are respectfully solicited.

### CONCLUSION

In conclusion, reconsideration and withdrawal of the rejections are respectively requested. Allowance of all claims is requested. Issuance of the application is requested.

It is requested that the Examiner telephone Stephen G. Stanton, Esq. (#35,690) at (610) 296 - 5194 or the undersigned attorney/George Saile, Esq. (#19,572) at

Docket: HCP 01 - 001

S/N: 10/042,570

(845) 452 - 5863 if the Examiner has any questions or issues that may be resolved to expedite prosecution and place this Application in condition for Allowance.

Respectively submitted,

A handwritten signature in black ink, appearing to read 'S. B. Ackerman', is written over a horizontal line.

Stephen B. Ackerman  
Reg. No. 37,761